

# PERMIT BOILERPLATE PROCEDURES FOR CONCRETE BATCH PLANTS

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February 22, 1999

## 1. PURPOSE

The purpose of these procedures is to specify the requirements for permit applicability and approval for concrete batch plants. This boilerplate is meant to provide guidelines for the minimum requirements of the Department of Environmental Quality.

This boilerplate does not apply to PSD or nonattainment permit review, or to facilities defined as major stationary sources or major modifications in 9 VAC 5-80-10. This boilerplate does include guidance on requirements for cement/flyash storage silos typically found at concrete batch plant facilities but does not provide guidance for other emission unit types that may (but not typically; e.g., fuel burning equipment) be located at concrete batching plants. Any such units should be evaluated on a case-by-case basis using other boilerplates or guidance as appropriate.

## 2. REFERENCES

Commonwealth of Virginia Regulations for the Control and Abatement of Air Pollution (ARegulations); 9 VAC 5-50-10 through 9 VAC 5-50-390, 9 VAC 5-80-10, 9 VAC 5-80-11.

AP-42, Fifth Edition, Section 11.12 (Concrete Batching- dated 10/86).

Virginia Department of Environmental Quality's Air Permitting Guidelines, New and Modified Sources, August 11, 1995.

## 3. DEFINITIONS - In addition to the definitions supplied below, the Regulations have within them definitions of regulatory terms (e.g., construction, modification) used in this procedure.

**Cement:** (1) Portland cement made from virgin materials. (2) Waste materials or byproducts from other manufacturing operations, such as flyash and metal smelting slags (Newcem). For the purposes of these procedures, cement is substance in (1) or (2) that does not contain any currently regulated hazardous air pollutants.

**Central mix:** where the concrete ingredients are mixed at the plant site and the contents are then transferred to either an open bed dump truck or an agitator truck for transport to the actual job site.

**Concrete:** generally a mixture composed of water, cement, fine aggregate (e.g. sand),

and coarse aggregate (e.g., gravel or crushed stone). A typical cubic yard of concrete weighs 4,000 lbs and contains 500 lbs cement, 1,240 lbs sand, 1,900 lbs coarse aggregate and 360 lbs water.

**Concrete batch plant:** facility which stores, conveys, measures and discharges concrete mix constituents into trucks for transport to a job site. The types of concrete batch plants include truck mixed and central mix facilities (this includes shrink mixed concrete).

**Shrink mixed:** where the concrete is partially mixed at the central mix plant and then completely mixed in a truck mixer on the way to the job site.

**Truck mixed:** where the concrete dry ingredients are gravity fed from the weigh hopper and water added into the mixer trucks; The concrete is mixed on the way to the site where the concrete is to be poured.

#### 4. PERMIT APPLICABILITY

This boilerplate applies to construction, reconstruction, installation, modification, or relocation of concrete batch plants stated in Part I of this procedure. 9 VAC 5-80-11 C provides a list of facilities that shall not be exempt, regardless of size or emission rate, from the permitting requirements of 9 VAC 5-80-10 as they pertain to construction, reconstruction or relocation (except relocation of permitted portable concrete batch plants; see VI.11 of these procedures). Concrete batching plants are one of the source categories listed. However, a modification to said facility resulting in increases in uncontrolled emission rates less than all of the emission rates, specified in 9 VAC 5-80-11 E, shall be exempt from the permitting requirements of 9 VAC 5-80-10 pertaining to modification.

Currently, concrete batching as described in these procedures, is not subject to an NSPS Subpart or MACT Standard. However, if a proposed concrete batch plant will include a crusher to recycle cured concrete, then the crusher and any associated materials handling/screening equipment should be reviewed for applicability of NSPS OOO provisions.

#### 5. EMISSIONS CALCULATIONS

##### A. Criteria Pollutant Emissions

Particulate matter (PM and PM<sub>10</sub>) is generally the only criteria pollutant that requires review for concrete batch plants. Other criteria pollutants may require evaluation on a case by case basis, depending on if other emission source types (e.g., fuel burning equipment) may be present at the facility. Particulate matter emissions from the individual processes of a concrete batching operation (e.g., weigh hopper loading, truck loading) or the entire process may be calculated using the appropriate emission factors

for concrete batching contained in the most current edition of AP-42. It may be assumed that PM<sub>10</sub> emissions are equal to the calculated particulate matter (PM) emissions, since AP-42, Section 11.12, dated 10/86 does not provide emission factors for PM<sub>10</sub>.

B. Hazardous Air Pollutant Emissions (HAPS)

For facilities covered under Part I of this procedure, a hazardous air pollutant review is generally not required.

C. Modeling

For facilities covered under Part I of this procedure, ambient air quality modeling is not generally required for anticipated pollutant emissions.

6. PERMIT REQUIREMENTS

A. Permit Condition Contents - The following subparagraphs state the requirements that have been tailored for concrete batch plants. Note: that the subparagraphs numbers do not necessarily correspond to the paragraph numbering of the AConcrete Batch Plant Conditions≡ boilerplate.

1. **Equipment List** - Rather than listing individual emission units/processes (with the exception of storage silos) making up a concrete batch plant, the concrete batch plant and its maximum hourly production rate should be listed. All cement, flyash or other material storage silos should also be listed along with their individual storage capacities. Other emission source types (e.g., fuel burning equipment) should also be listed as appropriate. Non-permitted equipment may also be listed if deemed appropriate by the permit engineer. All equipment listed should have its reference numbers identified.
2. **9 VAC 5-50-260: Standard of Stationary Sources (BACT), Pollution Control Equipment/Methods** - BACT for concrete batching operations is a visible emission limit of 5 percent opacity. The permit shall contain conditions specifying the following controls, methods or equivalent (as documented by the permit engineer) deemed as BACT for concrete batch plants:

Fabric filter baghouse system or equivalent: used to control particulate matter emissions from operation of weigh hoppers, mixer (central mixed facilities) and truck loadout (truck mixed facilities). Use of a correctly sized fabric filter baghouse system generally results in an outlet grain loading of 0.01 gr/dscf. For truck loadout at truck mixed facilities, use of a water ring and boot may be acceptable for meeting BACT. Evaluation

of these should be done on a case-by-case basis. For central mixed facilities, wet suppression is adequate control for truck loadout, since the product being loaded has sufficient moisture content, thus preventing fugitive emissions.

Fabric filter vent system: used to control particulate matter emissions when filling the cement or flyash silos. The emissions from the silos may also be controlled by the baghouse system used for the other emission units at the plant.

Wet suppression or other reasonable methods: used to control fugitive dust emissions from open aggregate storage stockpiles, conveying equipment and haul roads. If agreed to by the source and the DEQ, provisions for requiring haul road paving and maintenance may be included under specific circumstances.

3. **Monitoring** - Emissions monitoring is not required for concrete batch plants. A requirement to monitor the pressure drop across large fabric filter baghouse systems (this does not include bin vent filters that may be used atop of storage silos) should be included in the permit.
4. **Throughput and Hours of Operation Limits** - Generally, annual (12 month rolling basis) concrete production (tons or cubic yards) throughput consistent with the emission evaluation should be listed. Alternatively, throughput could be specified as tons of dry cement and dry aggregates. When the emission evaluation is based on concrete production, there is no need to place limits on individual processes (e.g. throughput limits on the dry products throughput of the weigh hoppers). Generally, most operators of concrete batch plants maintain records of concrete production (tons or cubic yards) in lieu of operating hours of concrete batch plant equipment. Thus, concrete production limits are preferred over an hours of operation limit. In rare instances (e.g., a source not wanting production limits), a permit engineer may be able to justify placing an hours of operation limit in a permit. A production limit and a hours of operation limit should not both be specified, since a concrete batch plant will most likely exceed its hours of operation limitation before exceeding its production limit. Other throughput or consumption limits may need to be included if other source types (e.g., fuel burning equipment) are located at the concrete batch plant facility for which a permit is sought. This will be a case-by-case decision using other boilerplates or guidance as appropriate.
5. **Pollutant Emission Limits** - Particulate matter (PM and PM<sub>10</sub>) emissions of less than 0.5 tons per year are not listed in the permit. Any annual emission (tons per year) limits placed in the permit should be consistent with the emission evaluation of the annual production limit and are used

mainly for inventory purposes.

6. **9 VAC 5-50-260: Standard of Stationary Sources (BACT), Visible Emission Limit** - The permit shall contain the following opacity limit for visible emissions discharged from the operation of the concrete batch plant:

Five percent (5%): from any fabric filter, vent or exhaust duct. Compliance with this limit is determined by EPA Method 9 (reference 40 CFR 60, Appendix A). The limit applies at all times except during startup, shutdown and malfunction and for one six minute period in any hour of not more than 10% opacity.

7. **Emissions Testing** - Particulate matter (Method 5) testing is generally not required for concrete batch plants, since for fabric filter exhausts (not subject to a NSPS) or equivalent control technology, a Visible Emission Evaluation (VEE) is viewed as an appropriate performance test method for compliance determination, even if an hourly particulate matter emission limit (or grain loading) is specified. Therefore, compliance with the opacity limit shall be determined by conducting observations in accordance with EPA Method 9 (reference 40 CFR 60, Appendix A) on fabric filter baghouse systems (this does include passive bin vent filters that may be used atop of storage silos) or equivalent control systems. The boilerplate contains optional condition for the permit writer to include a VEE to be performed for initial compliance determination. Any VEE for initial compliance determination should be conducted with the source operating at a capacity at least 80 percent of its maximum rated (or permitted) capacity and should be performed within 60 days after achieving the maximum production rate, but not later than 180 days after initial startup of the source. Two (or other number of copies deemed appropriate by the permit engineer) copies of a written report of the test results shall be submitted to the appropriate DEQ regional office within 45 days of test completion. Also, the boilerplate contains optional condition reminding the source of their obligation to conduct additional VEEs upon request by the DEQ. This is just a reiteration of 9 VAC 5-50-30G. This optional condition may also be used to specify that such VEEs be done at a certain frequency as justified by the permit engineer on a case-by-case basis.
8. **Initial Notifications** - The permit shall contain a requirement for an owner of a new or modified concrete batch plant to provide the following written notifications, as applicable, to the appropriate DEQ regional office:

1. date of commencement of construction, reconstruction or modification postmarked no later than 30 days after such date;
2. anticipated date of initial startup postmarked not more than 60 days nor less than 30 days prior to such date;
  - a. actual date of initial startup postmarked within 15 days after such date;
  - b. date of scheduled VEE postmarked not less than 30 days prior to such date.
9. **Notification for Facility and/or Control Equipment Maintenance or Malfunction** - The permit should contain the regulatory notification requirements in the event that any component of the concrete batch plant (including related air pollution control equipment) fails or malfunctions in such a manner that may cause excess emissions for more than one hour. While made optional to be specified in the permit, the permit engineer, inspector, and source owner should be aware of the regulatory notification requirements in the event that shutdown and/or bypassing air pollution control equipment is necessary for scheduled maintenance which will result in excess emissions for more than one hour.
10. **Onsite Records** - the permit shall contain a condition requiring the owner of a concrete batch plant to keep records of all emissions data and operating parameters as necessary to demonstrate compliance with applicable permit conditions. These should include at minimum: the yearly production of concrete (or alternatively, throughput of dry cement and dry aggregates), calculated monthly as the sum of each consecutive 12 month period; calculation of the facility's particulate matter (PM and PM<sub>10</sub>) emissions to demonstrate compliance with the permitted emission rates (if applicable), and a copy of the facility's VEE (if applicable). Appropriate emission records for other emission source types (e.g., fuel burning equipment) should also be maintained as applicable. These records shall be retained for at least two years.
11. **Notification for Relocation of Portable Facilities** - The permit boilerplate contains an optional provision for concrete batch plants requesting the flexibility to be permitted as a portable emissions unit. For concrete batch plants permitted as portable emissions units, a new permit will not be required for the relocation of the permitted portable concrete batch plant provided the conditions under 9 VAC 5-80-11 G of the Regulations are met. These include:

- a. The emissions of the unit at the new location would be temporary;
- b. The emissions from the unit would not exceed its allowable emissions;
- c. The unit would not undergo modification or reconstruction;
- d. The unit is suitable to the area in which it is to be located; and
- e. Reasonable notice is given to the appropriate regional/satellite office (to which the facility is being relocated) prior to the relocation, identifying the proposed new location and the probable duration of operation at the new location. Such notice shall be given to the appropriate regional/satellite office not less than 15 days in advance of the proposed relocation, unless a different time duration is previously approved by the appropriate regional/satellite office. If the new location is in different boundaries of current location=s regional/satellite office jurisdiction, then current location=s regional/satellite office should be copied on relocation notice.

12. **Reports for Facility or Control Equipment Malfunction** - the permit shall contain a condition requiring the owner of a concrete batch plant to furnish reports as applicable under 9 VAC 5-20-180 C and D.

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